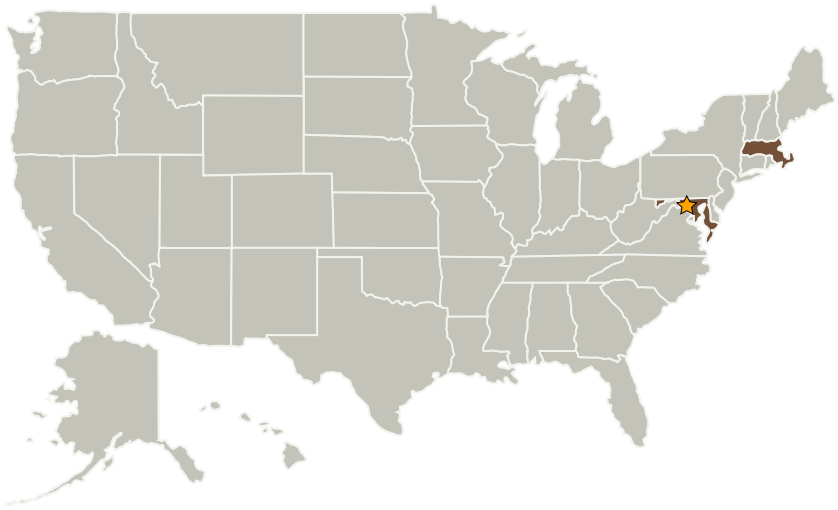
MMIC Cavity Oscillator at 50 and 94 GHz, Phase I

Completed Technology Project (2007 - 2007)

Project Introduction

An innovative, ultra low noise, single chip cavity oscillator is proposed. The oscillator is fully integrated on standard MMIC process. It operates in the frequency range of 50 -- 100 GHz with phase noise of -112 at 100 KHz offset. At the core of the oscillator is a rectangular cavity based resonator. To our knowledge, this is the first ever implementation of a waveguide cavity on standard MMIC process. This new technique, will allow the realization of ultra small high performance integrated oscillators for future market demands. In the future, a phase locked oscillator can be implemented on a single chip. The PLO will consist of a cavity oscillator, phase frequency detector, prescaler and a loop filter. All components can be integrated on a standard GaAs HBT process.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Hittite Microwave Corporation	Supporting Organization	Industry	Chelmsford, Massachusetts

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Maryland	Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.2 Radio Frequency
    - TX05.2.7 Innovative RF Technologies